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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/082,184	02/26/2002	Yasutaka Toyoda	500.41284X00	2434

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EXAMINER

LEE, TOMMY D

ART UNIT	PAPER NUMBER
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2624

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,184

Applicant(s)

TOYODA ET AL.

Examiner

Thomas D. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/26/02, 5/2/02.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 13 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not set forth performing an error diffusion method and an averaged error minimization method, whereby an output signal containing low-frequency noise, such as chain-shaped texture, is produced, as recited in the above claims.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Base claim 1 recites "a signal correcting unit for correcting the color signal *entered into said approximating unit* by employing said approximate error held in said approximate holding unit." However, according to the specification, it is a *subsequent* color signal that is corrected by the approximate error. After the approximate error E_i is written into the line memory (Fig. 11, step S14) and signals D and E are output (step S15), the flowchart loops back up to step S11, where a next signal A is input, and a correction signal B is calculated at step S12 using approximate error (see specification, page 29, lines 12-25; Fig. 11).

Base claim 10 recites "a step for using a color correction table containing a correspondence relationship between a predetermined discrete input color signal and an output color signal in a table form so as *to acquire a discrete input color signal* which is approximated to said corrected input color signal." However, according to the specification, the discrete input color signal is obtained, not as a result of the use of the color correction table, but by using approximating unit 13, which approximates an input signal prior to entry of the signal into the color correction table (page 14, line 24 – page 15, line 12; Fig. 1).

Further regarding dependent claims 13 and 14, the phrase "such as" renders the claims indefinite because it is unclear whether the limitations following the phrase ("chain-shaped texture") are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 4, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 4,866,514 (Yeomans) in view of U.S. Patent 5,377,025 (Spaulding et al.).

Regarding claim 1, Yeomans discloses an image processing apparatus in which a color correction table containing a correspondence relationship between an input color signal and an output color signal in a table form is utilized in a conversion operation between color signals, comprising: a color correction table holding unit for storing therein a predetermined input color signal and a color correction table which contains a correspondence relationship between said predetermined input color signal and an output color signal in a table form (LUT 2 (column 3, lines 4-17)); an approximate error producing unit for calculating an approximate error based upon the inputted color signal (error signals based on input image signal (column 3, lines 21-25) generated by LUTs 6-8 (column 3, lines 32-46)); an approximate error holding unit for holding therein the approximate error calculated by said approximate error producing unit (error values fed

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to circuits 9-11 (column 3, lines 56-61)); a signal correcting unit for correcting the color signal by employing said approximate error held in said approximate holding unit (adjacent pixels modified according to error values (column 3, lines 62-68)); and an output unit for outputting an output color signal which corresponds to the input color signal outputted from said approximating unit with reference to said color correction table (output signals from LUT2 control monitor display (column 4, lines 4-5)).

Yeomans does not disclose an approximating unit for approximating an entered input signal to a discrete input color signal of the color correction table to thereby output the approximated color signal (Yeomans inputs the input signal to the color correction table without first converting the input signal into an approximate (discrete) input signal). Spaulding et al., similar to Yeomans, disclose conversion of input color signals to output color signals using a look-up table. Spaulding et al. further disclose quantizers for approximating the input color signals prior to conversion by the look-up tables (column 4, lines 44-49). In view of Spaulding et al., one of ordinary skill in the art would have recognized that the use of quantizers for approximating the input signals enables the use of a look-up table that does not require as much memory as would be required if the image signals weren't first quantized, and thus the overall cost of the system can be reduced (column 2, line 58 – column 3, line 10). Thus, it would have been obvious for one of ordinary skill in the art to modify the teaching of Yeomans by providing a means for quantizing the input image data prior to conversion by the look-up table, as disclosed in Spaulding et al.

Regarding claim 4, Spaulding et al. disclose comparison of an inputted color signal with discrete input color signals (quantization values) so as to determine such a discrete color signal which is approximated to said inputted color signal (input color levels 0 through 3 grouped into first quantized color level, input color levels 4 through 6 grouped into second quantized color level, etc. (column 5, lines 12-16)). This is functionally equivalent to providing a threshold value of 3 between the first and second quantized color levels, where the first quantized level is chosen if the input color level is less than or equal to the threshold value, and the second quantized level is chosen if the input color level is greater than the threshold value.

Regarding claim 8, Spaulding et al. disclose discrete input color signals (quantization values) correspond to minimum gradation, maximum gradation, and gradation equal to the respect subdivided points in such a case that a total gradation number of an input color signal is equally subdivided by "N" (symbol "n" being 2, or more positive integers) (first quantized color level inherently corresponding to minimum gradation, last quantized color level inherently corresponding to maximum gradation, quantization values equally subdivided (input color levels 0 through 3 grouped into first quantized color level, input color levels 4 through 6 grouped into second quantized color level, etc. (column 5, lines 12-16))).

Claims 10 is a method claim corresponding to above-rejected apparatus claim 1. The combined teaching of Yeomans and Spaulding et al. performs the method steps, as related above.

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9. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yeomans and Spaulding et al. as applied to claims 1 and 10 above, and further in view of U.S. Patent 5,841,951 (Shu et al.).

Yeomans discloses an output signal outputted from the output unit constituted by gradation data which can be represented by a device into which said output color signal is entered (output signals control monitor display (column 4, lines 4-5), output values fall within gradation range of 0 to 255 (column 4, lines 6-12)). While a dither process operation is not explicitly disclosed in either Yeomans or Spaulding et al., the use of a dither matrix to convert multi-level image data into binary values to be outputted by a binary output device, such as a printer, is well known in the art. Shu et al., similar to Yeomans and Spaulding et al., discloses conversion of input color signals to output color signals using a look-up table. Shu et al. further provides a dither processing operation for converting a corrected image for output by a printer (column 9, lines 65-67)). In view of the well-known use of dither processing of image data so that a multi-level image may be converted to binary image data for output on binary devices, it would have been obvious for one of ordinary skill in the art to modify the combined teaching of Yeomans and Spaulding et al., by providing a dither processing unit so that the color image data converted by the color conversion process may be binarized for output on a printer.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yeomans in view of Spaulding et al. as applied to claim 1 above, and further in view of U.S. Patent 5,689,350 (Rolleston).

Yeomans in view of Spaulding et al. do not disclose discrete input color signals that are stored in the color correction table at non-equal intervals. Rolleston, similar to Yeomans and Spaulding et al., discloses conversion of input color signals to output color signals using a look-up table. Rolleston further discloses input color signals in a color correction table that are not spaced at equal intervals (column 7, lines 12-59; Fig. 4). By adjusting the intervals to be non-equal, colors that are otherwise difficult to reproduce, as well as special colors, may be faithfully obtained from the look-up table (column 7, lines 24-33). Thus, it would have been obvious for one of ordinary skill in the art to modify the combined teaching of Yeomans and Spaulding et al., by providing a look-up table for storing input color signals at non-equal intervals, such as disclosed in Rolleston.

Allowable Subject Matter

11. Claims 3, 5, 7, 9 and 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found to disclose or suggest "a dither processing unit for comparing the data used to switch the gradation data with a dither matrix in which threshold values are arranged to thereby output a dither result; and an adding unit for adding said dither result to said gradation data," as recited in claims 3 and 12, in combination with the limitations recited in the corresponding base claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas D. Lee whose telephone number is (571) 272-7436. The examiner can normally be reached on Monday-Friday, 7:30-5:00, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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tdl
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